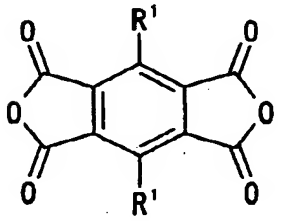
WHAT IS CLAIMED IS :

1. A polyimide film having a dynamic viscoelasticity whose tan δ peak is located in a range of not less than 310°C but not more than 410°C, and whose tan δ value at 300°C is not more than 0.05.

2. The polyimide film as set forth in Claim 1, the polyimide film prepared by copolymerizing an acid dianhydride component and a diamine component,

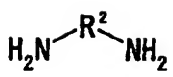
the acid dianhydride component including a pyromellitic dianhydride represented by Equation (1):



• • • (1)

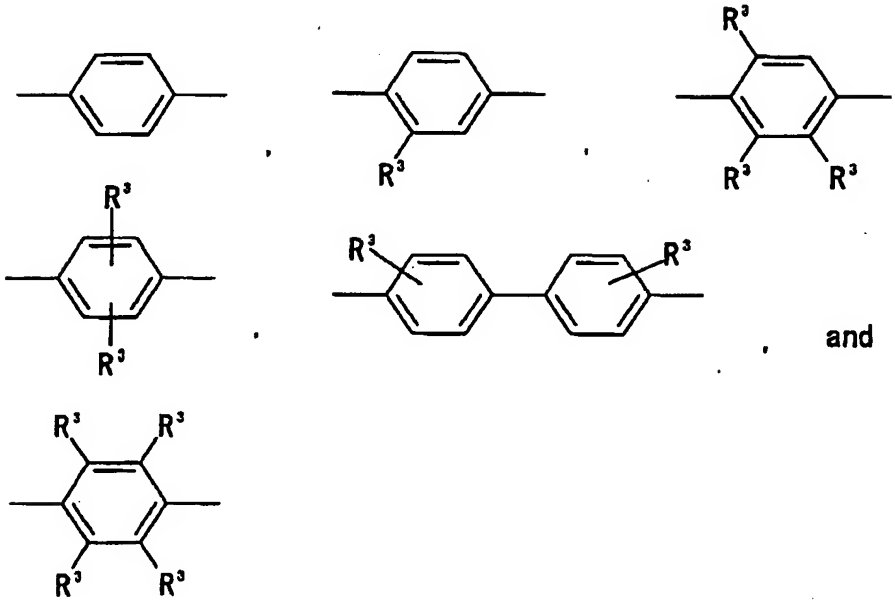
(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues), and the diamine component including a paraphenylene diamine and a diaminodiphenyl ether,

the paraphenylene diamine being represented by Equation (2):

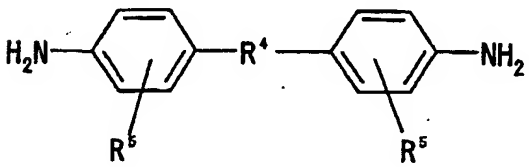


(2)

(where R^2 is a bivalent aromatic group selected from a group consisting of:

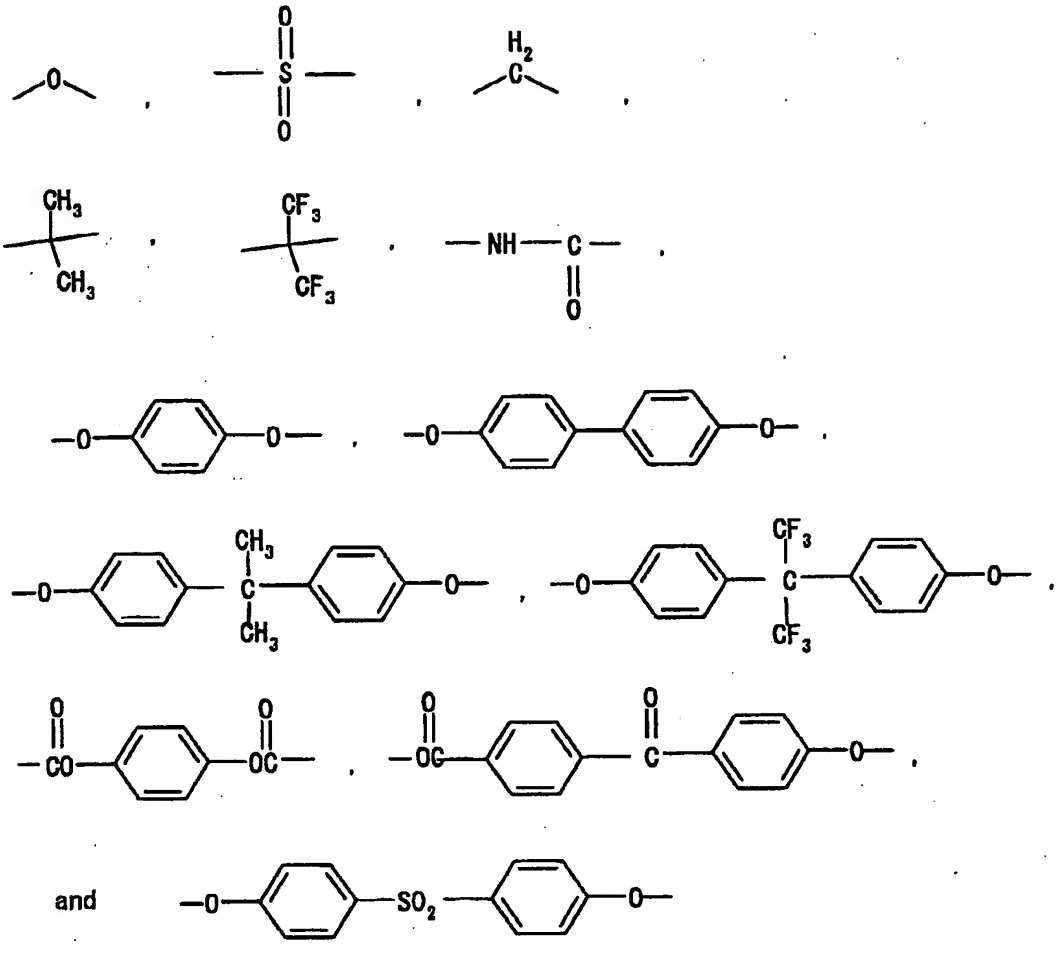


and each R^3 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$), and the diaminodiphenyl ether being represented by General Formula (3):



(3)

(where R^4 is a bivalent organic group selected from a group consisting of:



and each R^5 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$).

3. The polyimide film as set forth in Claim 2, wherein:

the acid dianhydride component includes the pyromellitic dianhydride in a range of from 5 mole% to 90 mole%.

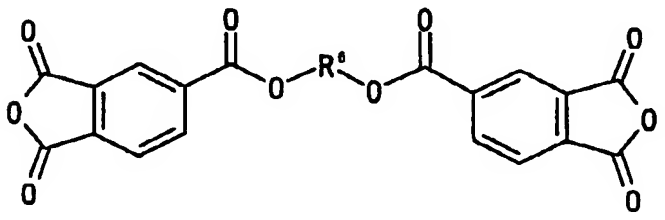
4. The polyimide film as set forth in Claim 2, wherein:

the diamine component includes the paraphenylene diamine in a range of from 25 mole% to 75 mole%, and diaminodiphenyl ether in a range of from 25 mole% to 75 mole%.

5. The polyimide film as set forth in Claim 2, wherein:

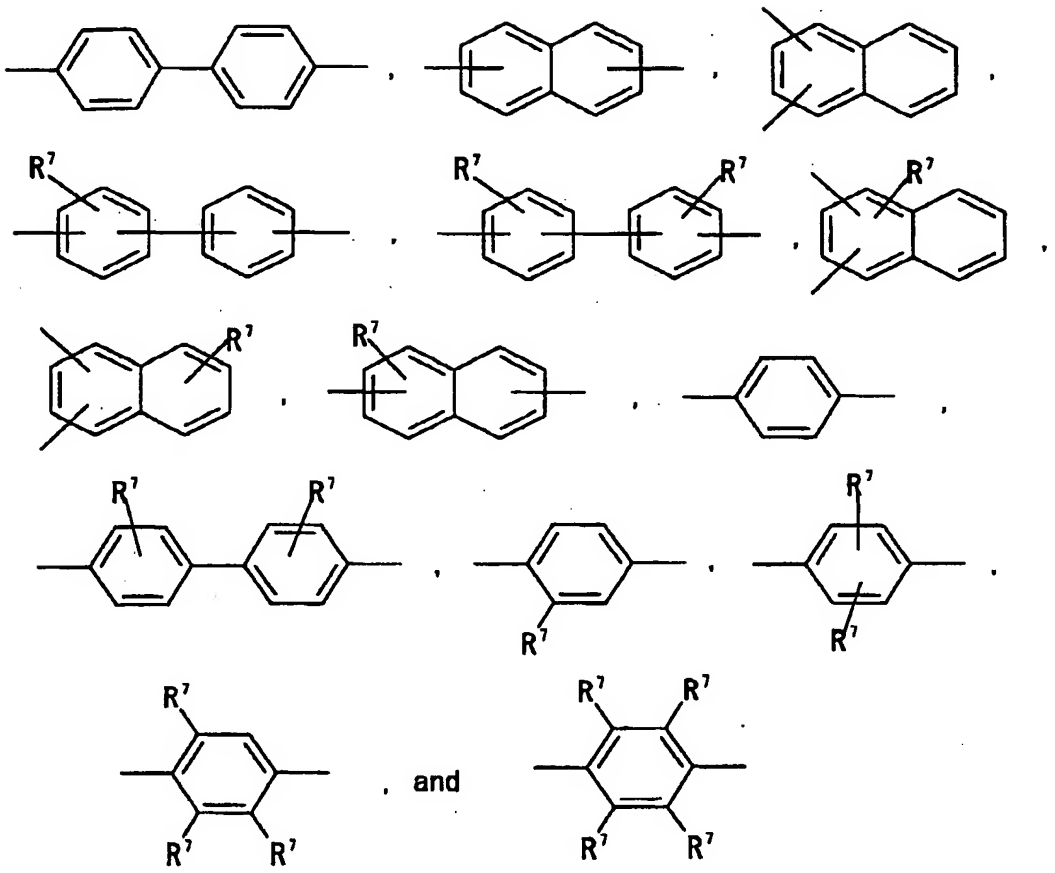
the acid dianhydride component further includes a bis(trimellitic monoester anhydride) and/or a biphenyl tetracarboxylic dianhydride,

the bis(trimellitic monoester anhydride) being represented by General Formula (4):



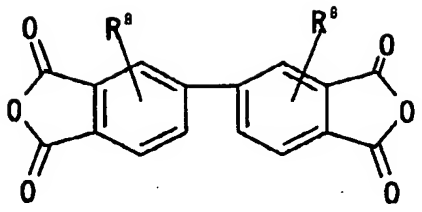
... (4)

(where R^6 is a bivalent organic group selected from a group consisting of:



and each R^7 is independently any onc of -H, -CH_3, -OH, -CF_3, -SO_4, -COOH, and -CO-NH_2), and

the biphenyl tetracarboxylic dianhydride being represented by General Formula (5):



... (5)

(where R^8 is a residue selected from a group consisting of H-, CH_3-, Cl-, Br-, F- and CH_3O-, and R^8 may be the same residues or the different residues).

6. The polyimide film as set forth in Claim 5, wherein the acid dianhydride component includes the bis(trimellitic monoester anhydride) in a range of from 20 mole% to 40 mole%.

7. The polyimide film as set forth in Claim 5, wherein the acid dianhydride component includes the biphenyl tetracarboxylic dianhydride in a range of from 0 mole% to 50 mole%.

8. The polyimide film as set forth in Claim 1, wherein:

a coefficient of hygroscopic expansion is 16ppm/%RH or less, and a water absorption percentage is 2.0% or less.

9. Laminate comprising:

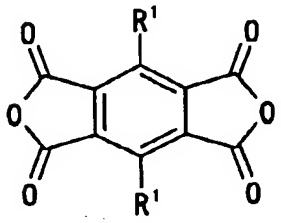
a metal layer; and

a polyimide film having a dynamic viscoelasticity whose tan δ peak is located in a range of not less than 310°C but not more than 410°C, and whose tan δ value at 300°C is not more than 0.05.

10. The laminate as set forth in Claim 9, wherein:

the polyimide film is prepared by copolymerizing an acid dianhydride component and a diamine component,

the acid dianhydride component including a pyromellitic dianhydride represented by Equation (1):

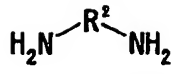


... (1)

(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues), and

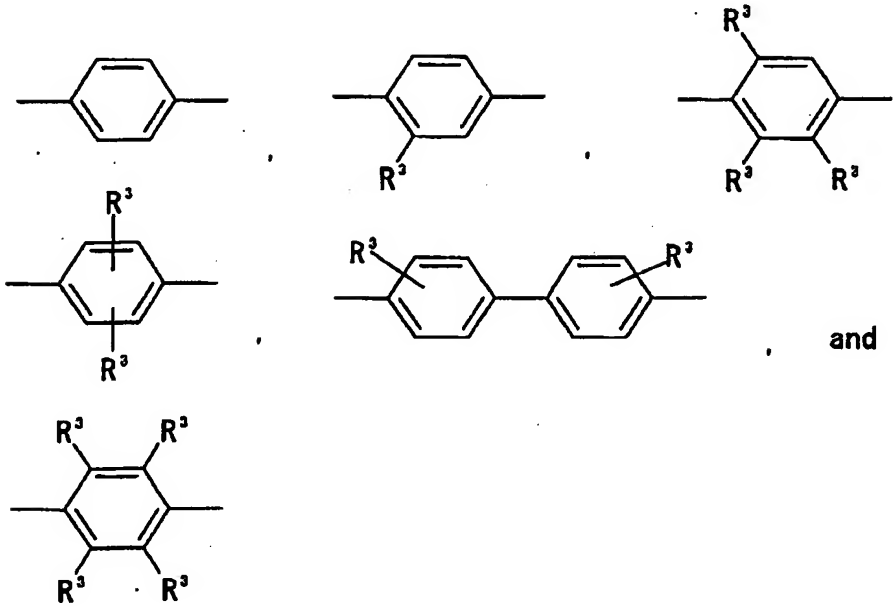
the diamine component including a paraphenylene diamine and a diaminodiphenyl ether,

the paraphenylene diamine being represented by Equation (2):



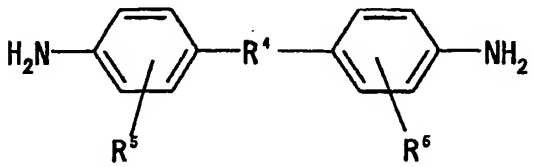
(2)

(where R^2 is a bivalent aromatic group selected from a group consisting of:



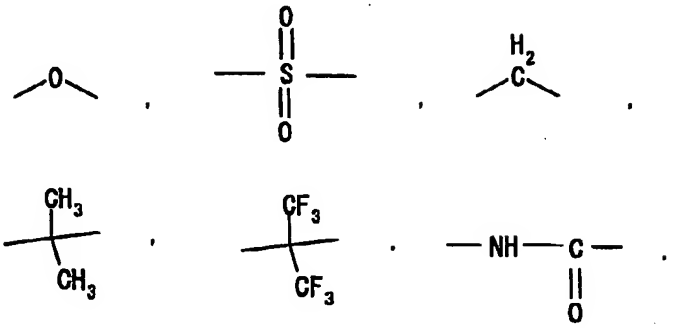
and each R^3 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$), and

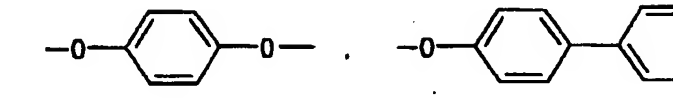
the diaminodiphenyl ether being represented by General Formula (3):

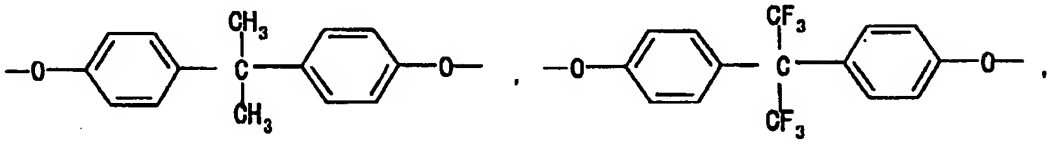


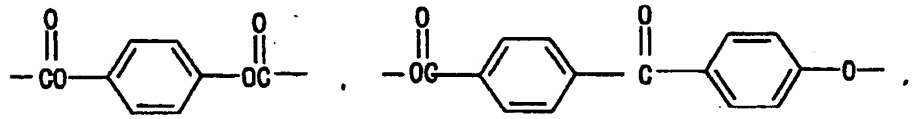
(3)

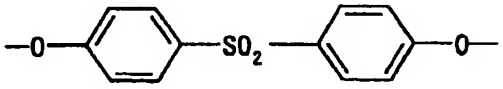
(where R^4 is a bivalent organic group selected from a group consisting of:









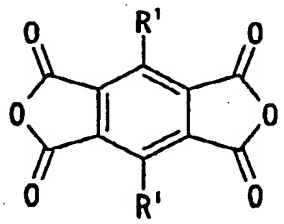
and 

and each R^5 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$).

11. A polyimide film prepared by copolymerizing an acid dianhydride component and a diamine component,

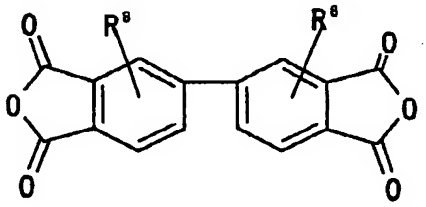
the acid dianhydride component including a pyromellitic dianhydride and a biphenyl tetracarboxylic dianhydride,

the pyromellitic dianhydride being represented by General Formula (1):



· · · (1)

(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues), and the biphenyl tetracarboxylic dianhydride being represented by General Formula (5):



· · · (5)

(where R^8 is a residue selected from a group consisting of H-, CH_3-, Cl-, Br-, F- and CH_3O-, and R^8 may b the same

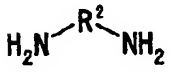
residues or the different residues), and

the polyimide film having such an etching speed that one side thereof is etched with a 1N potassium hydroxide solution at an etching speed of 0.1μm/minute (one side) or higher.

12. The polyimide film as set forth in Claim 11, wherein:

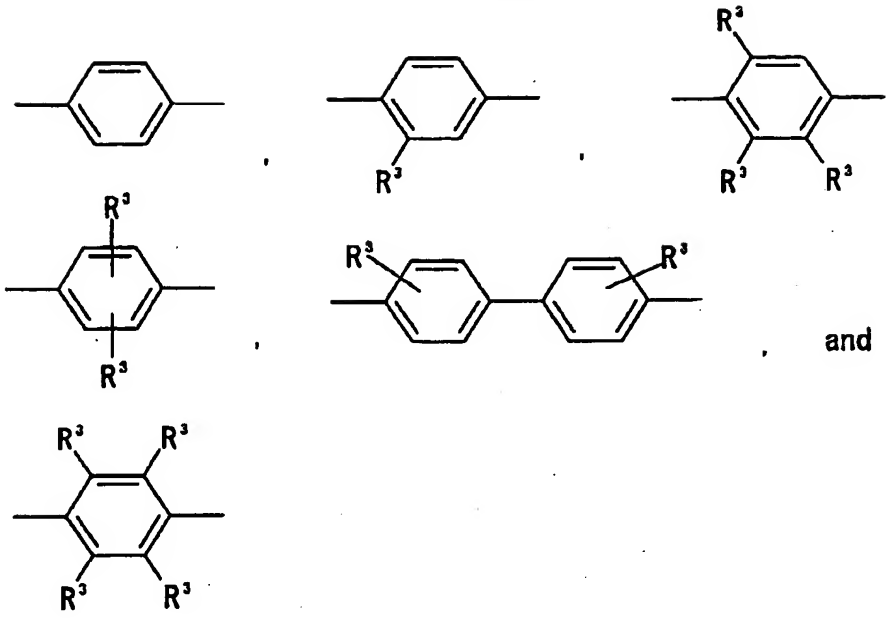
the diamine component includes a paraphenylene diamine and/or a diaminodiphenyl ether,

the paraphenylene diamine being represented by General Formula (2):

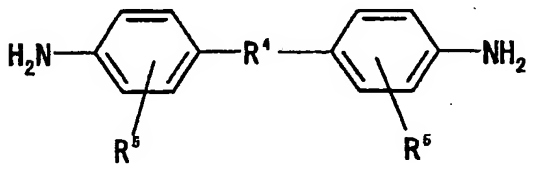


... (2)

(where R^2 is a bivalent aromatic group selected from a group consisting of:

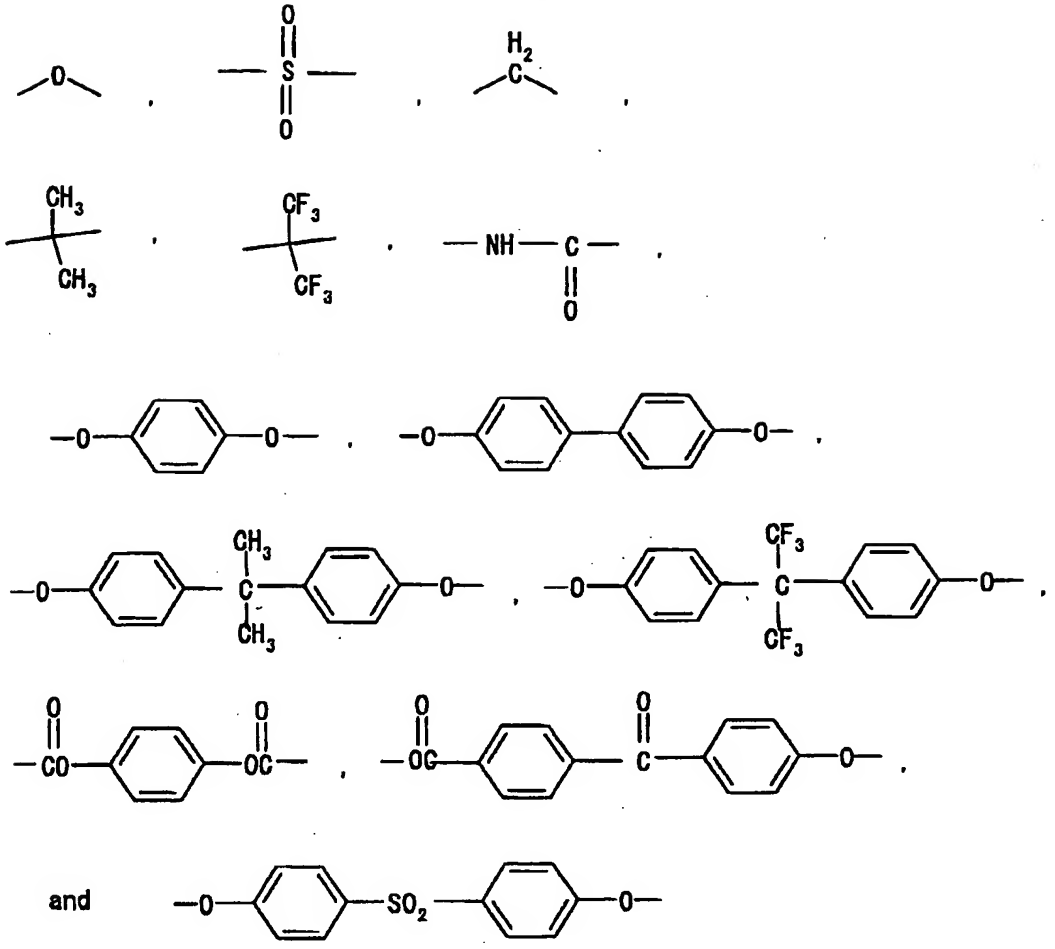


and each R^3 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$), and the diaminodiphenyl ether being represented by General Formula (3):



$\cdots$ (3)

(where R^4 is a bivalent organic group selected from a group consisting of:



and each R^5 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$).

13. The polyimide film as set forth in Claim 11, wherein:

the acid dianhydride component includes the pyromellitic dianhydride in a range of from 30 mole% to

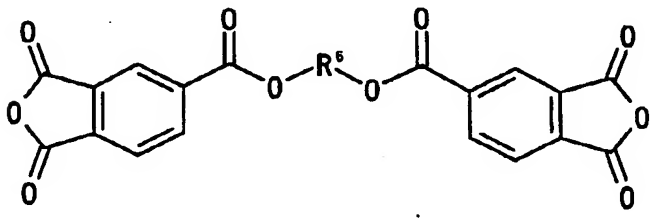
99.9 mole%, and the biphenyl tetracarboxylic dianhydride in a range of from 0.1 mole% to 50 mole%.

14. The polyimide film as set forth in Claim 12, wherein:

the diamine component includes the paraphenylene diamine in a range of from 15 mole% to 85 mole%, and diaminodiphenyl ether in a range of from 15 mole% to 85 mole%.

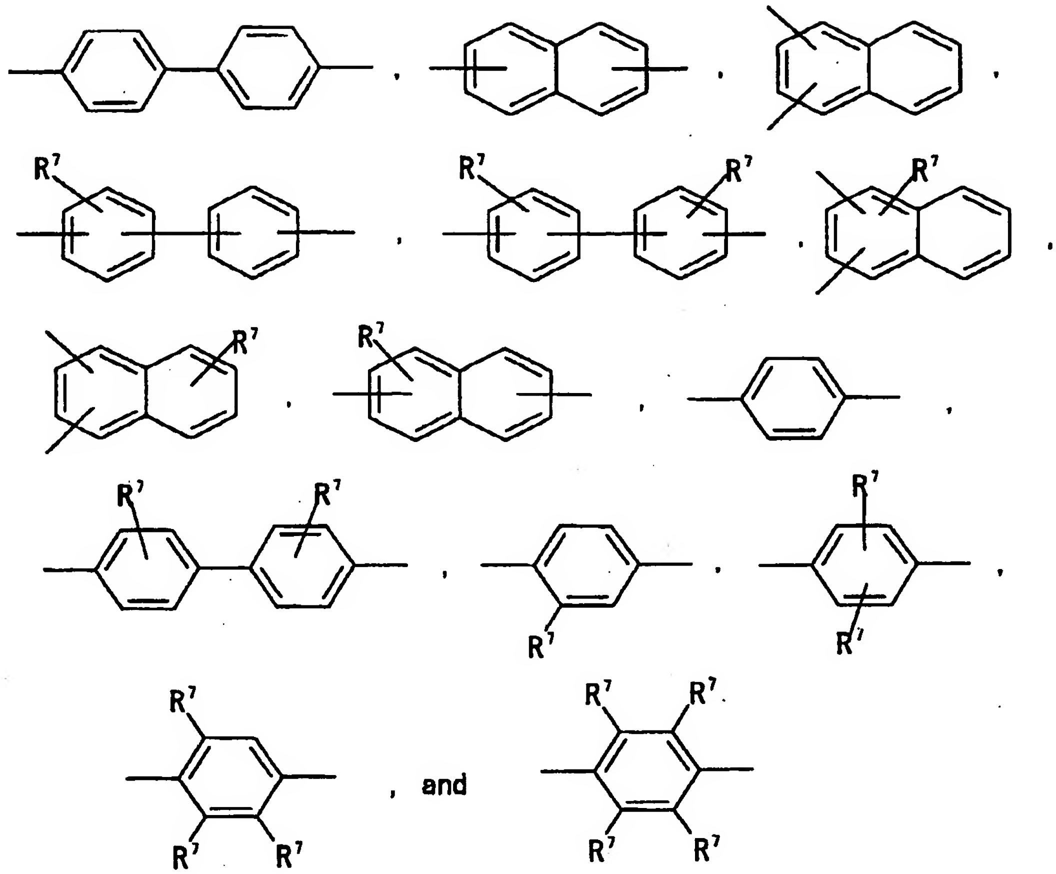
15. The polyimide film as set forth in Claim 12,

the acid dianhydride component further includes a bis(trimellitic monoester anhydride) being represented by General Formula (4):



... (4)

(where R^6 is a bivalent organic group selected from a group consisting of:



and each R^7 is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, and $-CO-NH_2$).

16. The polyimide film as set forth in Claim 15, wherein:

the acid dianhydride component includes the bis(trimellitic monoester anhydride) in a range of from 10 mole% to 50 mole%.

17. The polyimide film as set forth in Claim 11, wherein:

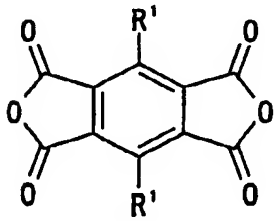
a retention percent of tear-through resistance of the polyimide film after exposing the polyimide film to environment of a temperature of 150°C, a humidity of 100%RH, and 4 atmospheric pressure for 48 hours is not less than 50%.

18. Laminate, comprising:

a metal layer; and

a polyimide film prepared by copolymerizing an acid dianhydride component and a diamine component,

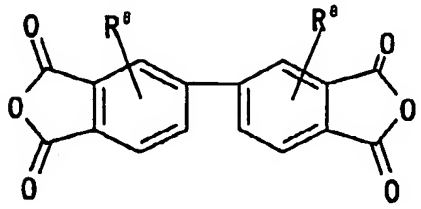
the acid dianhydride component including a pyromellitic dianhydride and a biphenyl tetracarboxylic dianhydride, the pyromellitic dianhydride being represented by General Formula (1):



... (1)

(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues), and

the biphenyl tetracarboxylic dianhydride being represented by General Formula (5):



... (5)

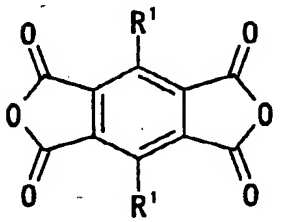
(where R^8 is a residue selected from a group consisting of H-, CH_3-, Cl-, Br-, F- and CH_3O-, and R^8 may be the same residues or the different residues), and

the polyimide film having such an etching speed that one side thereof is etched with a 1N potassium hydroxide solution at an etching speed of 0.1μm/minute (one side) or higher.

19. A polyimide film prepared by copolymerizing an acid dianhydride component and a diamine component,

the acid dianhydride component including the pyromellitic dianhydride, represented by General Formula (1), in a range of from 40 mole% to 80 mole%, the biphenyl tetracarboxylic dianhydride, represented by General Formula (5) in a range of from 1 mole% to 40 mole%, and the bis(trimellitic monoester anhydride, represented by General Formula (4), in a range of from 20 mole% to 50 mole%, and

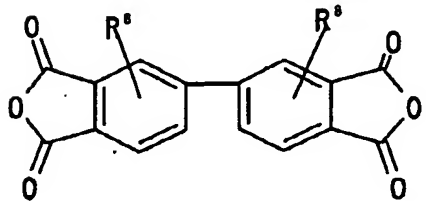
the diamine component including the paraphenylene diamine, represented by General Formula (2), in a range of 25 mole% to 75 mole%, and the diaminediphenyl ether, represented by General Formula (3), in a range of 25 mole% to 75 mole%, where General Formula (1) is:



... (1)

(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues);

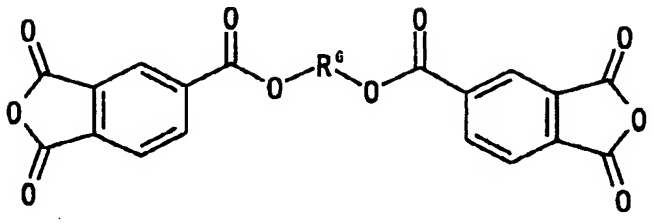
General Formula (5) is:



... (5)

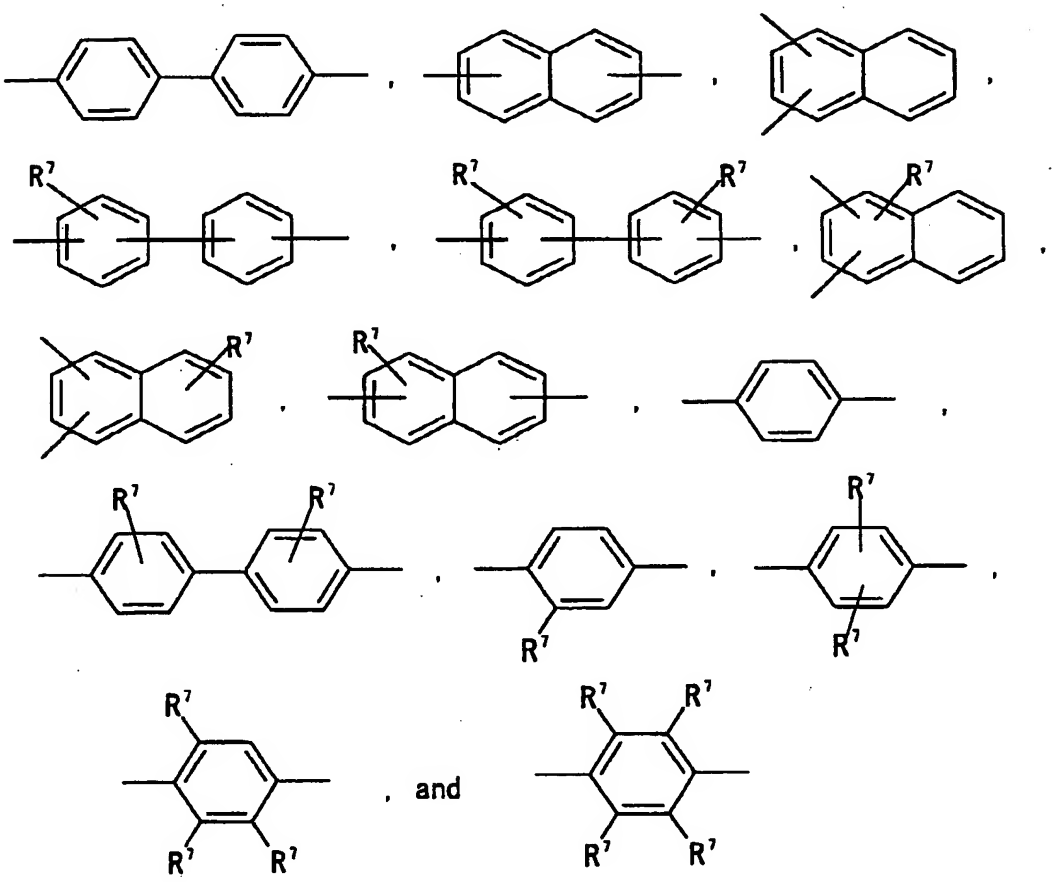
(where R^8 is a residue selected from a group consisting of H-, CH_3-, Cl-, Br-, F- and CH_3O-, and R^8 may be the same residues or the different residues);

General Formula (4) is:



. . . (4)

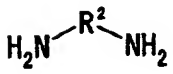
(where R^6 is a bivalent organic group selected from a group consisting of:



and

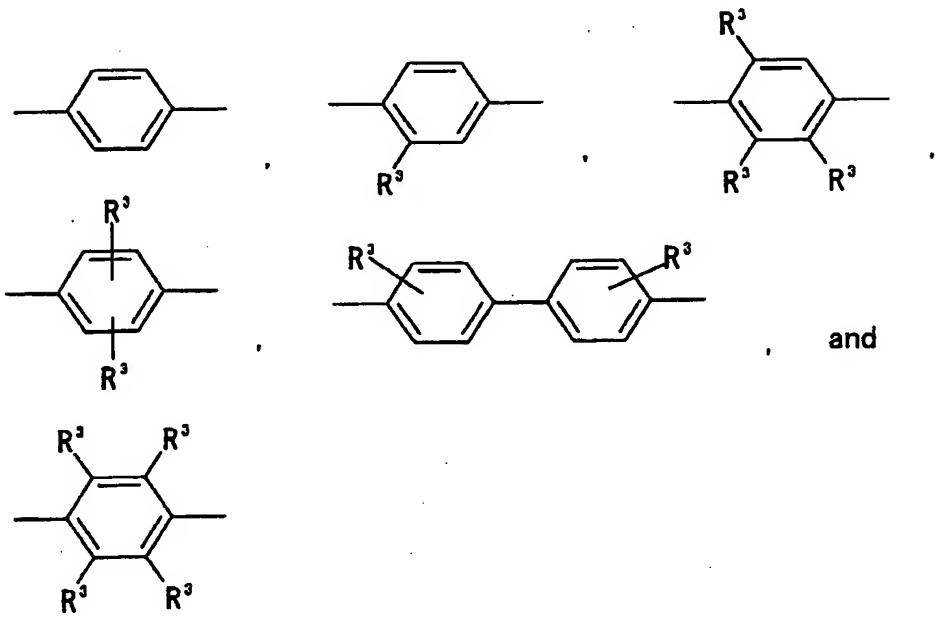
and each R^7 is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, and $-CO-NH_2$);

General Formula (2) is:



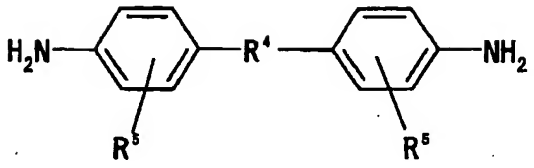
(2)

(where R^2 is a bivalent aromatic group selected from a group consisting of:



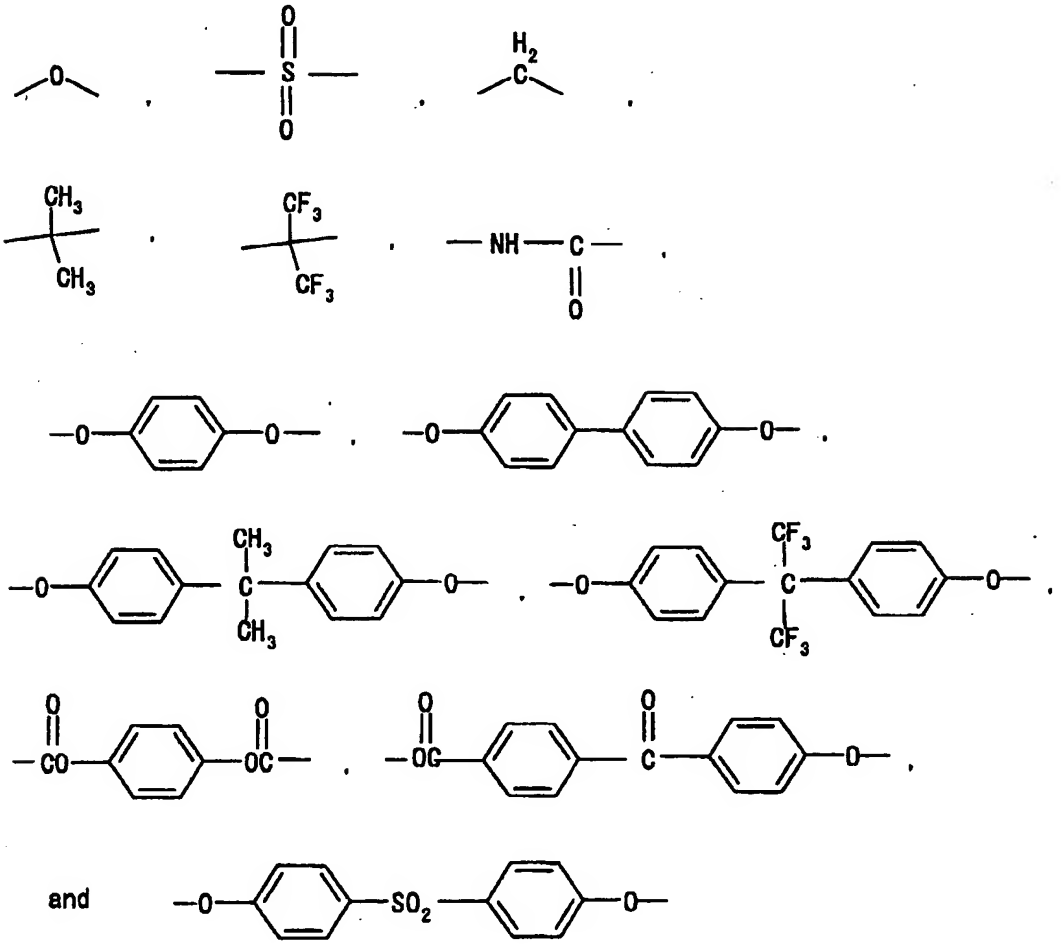
and each R^3 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$); and

General Formula (3) is:



(3)

(where R^4 is a bivalent organic group selected from a group consisting of:



and

and each R^5 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$).

20. The polyimide film as set forth in Claim 19, the polyimide film having a thickness in a range of from 1μm to 200μm.

21. The polyimide film as set forth in Claim 19, the polyimide film having a modulus of elasticity in a range of from 500kg/mm² to 800kg/mm².

22. The polyimide film as set forth in Claim 19, the polyimide film having a coefficient of hygroscopic expansion in a range of from 2ppm/%RH to 20ppm/%RH.

23. The polyimide film as set forth in Claim 19, the polyimide film having a coefficient of liner expansion in a range of 1 to 30 × 10^{-6}cm/cm/°C at a temperature of from 100°C to 200°C.

24. The polyimide film as set forth in Claim 19, wherein:

a peel strength at an interface between the polyimide

film and a metal layer of laminate is not less than 5N/cm, the laminate having the polyimide film and the metal layer that is formed on the polyimide film by vacuum depositing and electroplating; and

a retention rate of the peel strength is not less than 10% after exposing the laminate to environment of a temperature of 121°C and a humidity of 100%RH for 12 hours.

25. Laminate comprising:

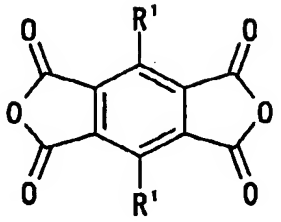
a metal layer; and

a polyimide film prepared by copolymerizing an acid dianhydride component and a diamine component,

the acid dianhydride component including the pyromellitic dianhydride, represented by General Formula (1), in a range of from 40 mole% to 80 mole%, the biphenyl tetracarboxylic dianhydride, represented by General Formula (5) in a range of from 1 mole% to 40 mole%, and the bis(trimellitic monoester anhydride), represented by General Formula (4), in a range of from 20 mole% to 50 mole%, and

the diamine component including the paraphenylene diamine, represented by General Formula (2), in a range of 25 mole% to 75 mole%, and the diaminediphenyl ether, represented by General Formula (3), in a range of 25

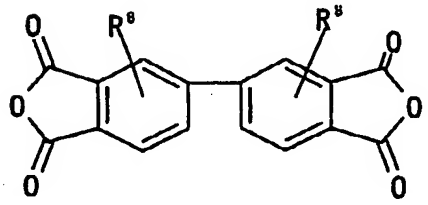
mole% to 75 mole%, where General Formula (1) is:



... (1)

(where R^1 is a residue selected from a group consisting of H-, CH_3-, CF_3-, Cl-, Br-, F-, and CH_3O-, and R^1 may be the same residues or different residues);

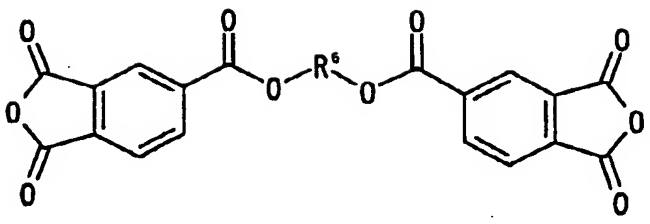
General Formula (5) is:



... (5)

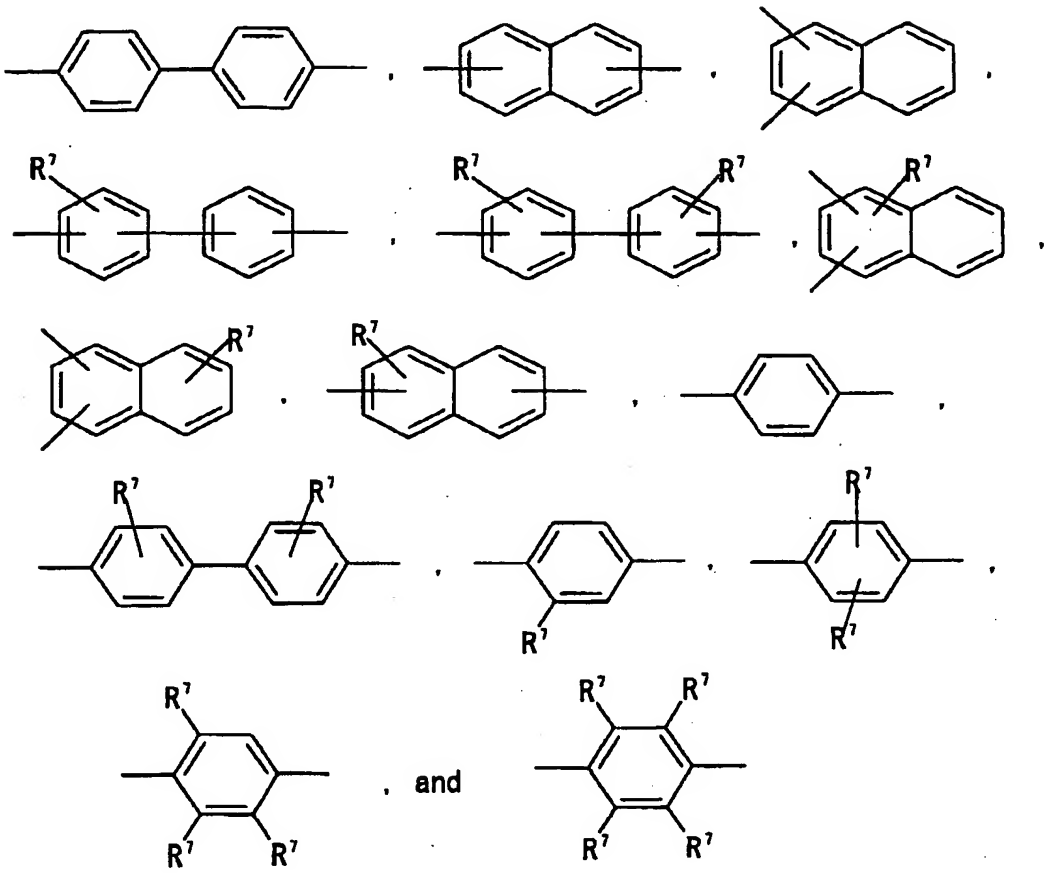
(where R^8 is a residue selected from a group consisting of H-, CH_3-, Cl-, Br-, F- and CH_3O-, and R^8 may be the same residues or the different residues);

General Formula (4) is:



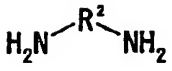
· · · (4)

(where R^6 is a bivalent organic group selected from a group consisting of:



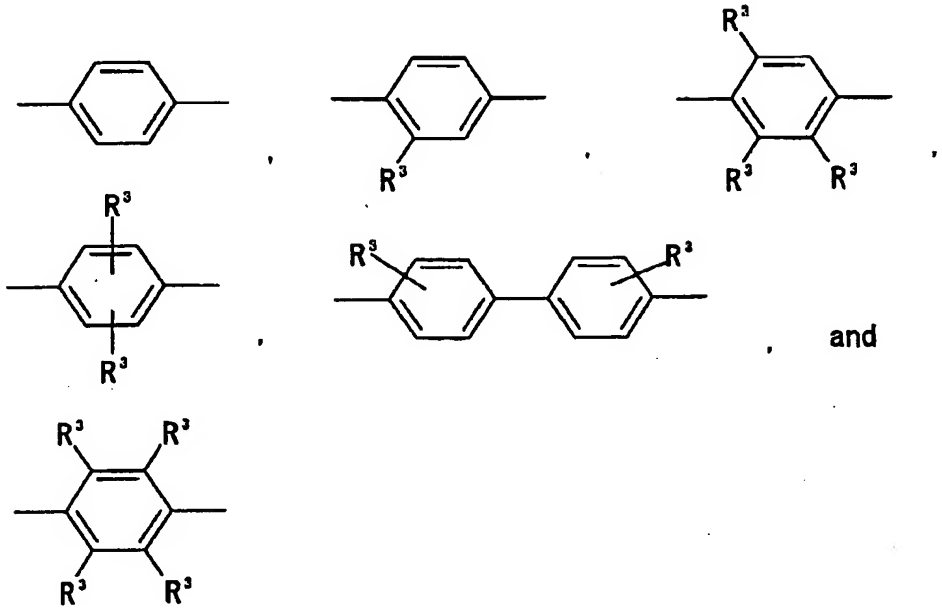
and each R^7 is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, and $-CO-NH_2$);

General Formula (2) is:



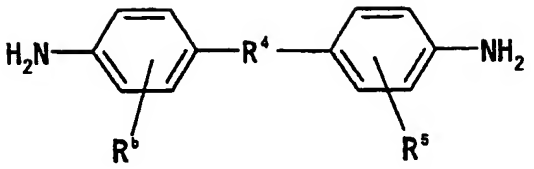
(2)

(where R^2 is a bivalent aromatic group selected from a group consisting of:



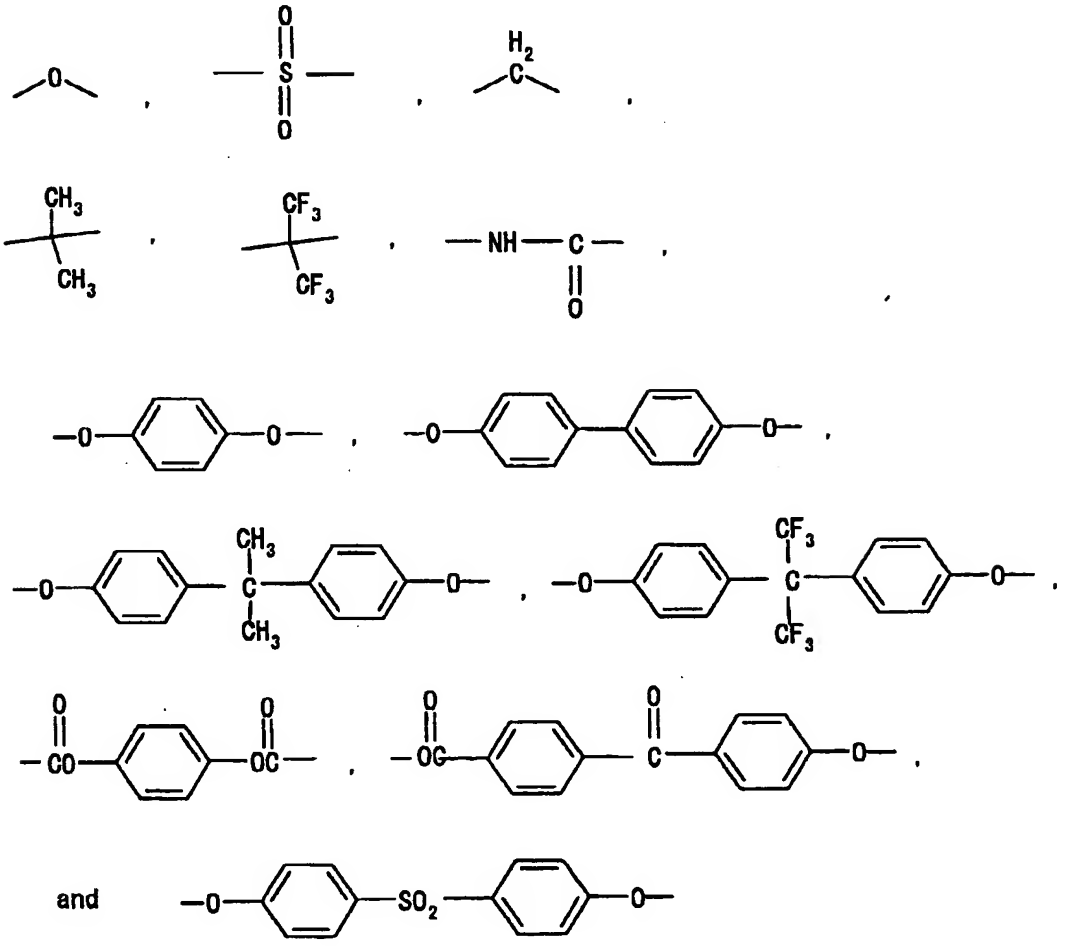
and each R^3 in the group is independently any one of -H, $-CH_3$, -OH, $-CF_3$, $-SO_4$, -COOH, $-CO-NH_2$, -Cl, -Br, -F, and $-OCH_3$); and

General Formula (3) is:



. . . (3)

(where R^4 is a bivalent organic group selected from a group consisting of:



and each R^5 in the group is independently any one of -H,

-CH_3, -OH, -CF_3, -SO_4, -COOH, -CO-NH_2, -Cl, -Br, -F, and -OCH_3).